

Environmental Testing of MEMS for Space Applications

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The purpose of space environmental verification and testing is to simulate the launch environment, qualify the designs for launch and in-service conditions, and to screen the flight hardware for manufacturing workmanship defects. Long term reliability and survival of MEMS devices for space application require effective demonstration of reliable and robust operation in the intended mission environment. Both assembly (or subsystem) and system level testing are generally conducted.

This paper defines, discusses, and recommends environmental design and verification requirements of MEMS for space applications. Typical environmental program policies are presented, along with environmental design and test configuration requirements. Sample specifications are provided for a variety of environments, ranging from launch vehicle dynamics to ground handling conditions.